

d. Remarks

At page 2, last 2 lines, and page 3, lines 16 – 17, the Office Action states: “Davis discloses ... a quasi 1D dielectric...” At page 2, lines 3 – 4 and 19 – 20, the Office Action states “ Davis ... fails to explicitly show a quasi 1D dielectric.” Clarification is requested as Davis cannot both disclose and fail to explicitly show a quasi 1D dielectric.”

Rejections under 35 U.S.C. § 103

Claims 1, 3 – 4, 10, 12, and 20 – 22 are rejected as obvious over U.S. Patent 5,771,148 (“Davis”). Office Action, page 2.

10 The Office Action does not establish a prima facie case of obviousness for claim 1 or claim 12. Claims 1 and 12 recite, at least, two specific limitations for the dielectric material. First, these claims recite that the dielectric material is a quasi 1D material. Second, these claims recite that the dielectric material has a charge or spin density wave state. A prima facie case of obviousness would require one or more citations of prior art for: (a) these two specific limitations and (b) motivating a modification Davis to arrive at claims 1 and 12.

1) No prior art citations for two limitations of claims 1 and 12

20 The Office Action does not provide prior art teachings for the above two specific limitations on the dielectric material as recited in claims 1 and 12. In particular, Davis does not state or suggest either that his dielectrics are quasi 1D materials or that his dielectrics have charge or spin density states. For example, Davis nowhere discloses that the intercalation compound (20) of his Figure 1 satisfies either of these limitations. Also, neither of these limitations are inherent to CuO compounds. Finally, the Office Action does not provide other prior art to teach these specific limitations of claims 1 and 12.

25 Rather than an explicit citation of prior art to teach the quasi 1D property of the dielectric material as recited in claims 1 and 12, the Office Action states:

[T]he examiner hereby takes official notice that it is well known in the art that the copper-oxygen dielectric material as taught by Davis (column 2 lines 64 -67) could be a quasi 1D dielectric material as the invention.

30 Office Action, page 3, lines 4 – 6, 20 – 22 (underlining added).

Applicants respectfully traverse the official notice taken by the Examiner. See M.P.E.P. 2144.03, 1st–3rd pars. Per 37 C.F. R. 1.105(d), Applicants request that the Examiner provide a prior art reference supporting his official statement “that it is well-known ... that the copper-oxygen dielectric material as taught by Davis ... could be a quasi 1D dielectric material”. Applicants note that Davis discloses a “lithium-intercalated CuO compound” at col. 2, lines 64 – 67. For that reason, the prior art reference would have to show that lithium-intercalated CuO compounds either are inherently quasi 1D materials or would have suggested such materials. The Office Action cites no prior art reference for a “quasi 1D material” as recited in claim 1 and claim 12.

Rather than a citation of prior art to teach that the dielectric material has a charge or spin density wave state as recited in claims 1 and 12, the Office Action is totally silent. No prior art is cited as teaching this separate limitation on the dielectric material of claims 1 and 12. The Office Action does not even mention this recited limitation. Applicants reiterate that a charge or spin density state is not inherent to CuO compounds. The Office Action cites no teaching for a material with a charge or spin density state as recited in claim 1 and claim 12.

The absence of citations of prior art teachings for the above-discussed limitations on the dielectric material makes the prima facie case of obviousness defective with respect to claims 1 and 12.

2) Insufficient Motivation to Modify Davis

A proper prima facie case of obviousness must also include a prior art suggestion to modify Davis. In particular, a suitable teaching would have to motivate replacement of intercalated dielectric compound (20) of Davis by a dielectric material that (a) is quasi 1D and (b) has a charge or spin density wave state as recited in claims 1 and 12.

With respect to such a motivation to modify, the Office Action only states:

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have a quasi 1D dielectric material, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. **In re Leshin, 125 USPQ 416.**

Office Action, page 3, 7 – 11, and page 4, lines 1 -4 (underlining added).

By the doctrine of Leshin, it would be obvious to replace a material in a prior art device by a new material if the new material was known in the prior art as suitable for the intended use in the prior art device. In this narrow situation, the replacement by the new material is obvious and thus, is motivated. In the absence of a prior art knowledge of the suitability for the intended use, the replacement of the material of the prior art device by the new material may indeed be non-obvious.

The Office Action provides no evidence that the “quasi 1D dielectric materials with density wave states” of claims 1 and 12 were known in the prior art as suitable for the use of Davis. In particular, Davis uses special dielectric materials to make “Voltage Variable Capacitors”. See Davis, title. Davis fabricates his voltage variable capacitors by using an intercalation compound for the capacitor’s dielectric, putting a reservoir with an intercalant in proximity of the compound, and using a voltage to vary the amount of intercalation in the intercalation compound of the capacitor’s dielectric. See Davis, abstract. In Davis, changes to the amount of intercalation vary the dielectric constant of the capacitor’s dielectric thereby allowing Davis to achieve his goal of making a variable capacitor. It is essential to the variable capacitors of Davis that the dielectric be suitable for use as an intercalation compound. Application of Leshin to claims 1 and 12 would require it to have been known in the prior art that “quasi 1D dielectric materials with density wave states” were suitable intercalation compounds, i.e., compounds of the type needed in the use of Davis. The Office Action provides no prior art teaching for such a use of “quasi 1D dielectrics with density wave states”. Without such a teaching, there is no evidence that the dielectric material of claims 1 and 12 was known in the prior art as suitable for the use of Davis. For that reason, the application of Leshin is improper herein. Without relying on Leshin, the Office Action provides no motivation to modify Davis and arrive at claims 1 and 12.

3) No Prima Facie Obviousness

The absence of one or more prior art teachings for the two specific features of claims 1 and 12 and the absence of a prior art motivation to modify Davis make the prima facie case of the obviousness defective. For these reasons, the rejections of independent claims 1 and 12 should be withdrawn. The rejections/objections to claims 2-11, 13-22


should also be withdrawn, at least, due to the dependence of each of these dependent claims on either claim 1 or claim 12.

Applicants respectfully request allowance of pending claims 1 – 22.

5 In the event of any non-payment or improper payment of a required fee, the Commissioner is authorized to charge or to credit **Lucent Technologies Deposit Account No. 12-2325** to correct the error.

Respectfully,

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Date: Oct. 8, 2003
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